Easy-PC

V23.0 Supplement

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Chapter 1. Getting Started

Installation

Backing up your files

If you already have Easy-PC installed, please remember to back up all your libraries, Technology files and any other data files before proceeding with the installation of the new version. The installer should not overwrite any of your own named files, but it can re-install new copies of our standard data files so if you have changed any of those files it is important to back them up first. If you are uncertain, check the time/date stamp on the file but in any case, make a back-up.

Of course, backing up your data is important not only for the upgrade but also at regular intervals during design.

Installation from a download link

If you have been provided with download link, use this to download the installation executable, named EasyPC.exe. Find it in your *Downloads* folder using Windows Explorer and double-click it. You'll need to type (or copy/paste) the password provided to unpack this file. Once the unpack password has been successful, you will be allowed to continue with the installation.

All other instructions should be followed until you click Finish to complete the installation.

The installation is the same for new and existing users alike. Existing users with versions prior to this latest version can install the new software over an existing installation without deleting the old one first.

Installation From CD

Installation is via the *autorun* setup. Insert the CD-ROM into your CD-ROM drive and wait a short time. The CD-ROM will run up to speed and an Easy-PC Welcome screen will appear. If *autorun* has been disabled on your computer you must execute the 'setup.exe' program using the **Start** menu and **Run** command from the Windows task bar.

With the installer running, once the **Welcome** screen is displayed, double-click on the **Install Easy-PC** - **Version 23.0** option, or click then press **Run**. Following the instructions on the screen, you should use the same **Destination Folder** for the Program Files as your existing Easy-PC program files.

All other instructions should be followed until you click Finish to complete the installation.

Note: CDs are no longer supplied by default. A download link would have been supplied unless otherwise requested.

Installing over existing Easy-PC software

If you already have an earlier version of Easy-PC installed on your system and you wish to install the new version into the same folder as the earlier one, please note that you will then end up with both versions listed in the Windows Control Panel list of installed applications.

If you don't want the earlier one to be listed in the **Control Panel**, you will need to un-install that version **<u>before</u>** you install the new one. If you install the new software into the same folder as the old version then try to un-install the old one, you will find that the new software will not run as the un-install will have removed many or all of the program files.

If you wish to install and use the new version without removing the old one, you will need to install the new version into a different folder. The two versions will then operate independently and either can be un-installed without preventing the other from running.

Data Files Location

There is a step in the **Setup** installation wizard that asks you where you want to place data files (for example, Libraries, Technology files, etc). The default is always to use the common documents folder, "Users\Public\Documents\Easy-PC" on Windows 7, 8 or 10 (or the local language equivalents) if you are installing for All Users, or into your own Documents folder if installing for current user only.

Running Easy-PC 23.0

As with all **Easy-PC** programs, an icon will appear in the **Number One Systems** folder, or the Start pane if using Windows 10, you may also wish to create an **Easy-PC** Shortcut icon on your desktop.

To start the program, double-click on the **Easy-PC** icon from the **Number One Systems** folder or the **Start** pane if using Windows 10.

Chapter 2. New Features in Easy-PC V23

Introduction

All features are categorised as being applicable to Schematic (SCM), PCB, or more general use (unmarked).

No Connect Pins

Some devices have pins that have no internal connection within the component and need to be identified so that they are not to be connected. For example, the ESD protection diode package from Texas Instruments has four such pins:



To help ensure that these are not accidentally connected in your design, a pin in a Component can now be marked as **No Connect**. This status is applicable to both Schematic and PCB designs.

This property is accessed via the **Pin Assignments** grid of the **Component Editor**. A new column On **No Connect** allows to toggle the No-Connect state of each pin. A display of **Yes** in this column indicates the pin cannot be connected to.

Gate	Sch Symbol	Sch Symbol	Sch Terminal	Pcb Symbol	Component Pin	Net (Class)	No Connect
Name	Name	Terminal Name	Number	Pad Number	Name/Number	Name	
a	93C66BX-X_C	D1+	1	1	1		
		D1-	2	2	2		
		GND	3	3,8	3,8		
		D2+	4	4	4		
		D2-	5	5	5		
		NC	6	6,7,9,10	6,7,9,10		Yes

To use this feature in your design, the No Connect status has to be applied to your component in the **Component Editor** first. It is then added to the design (using **Add Component**) or to an existing component in the design (using **Update Component**).

Note, the No Connect status is associated with each package defined for a component, the same as Component Pin Names. Ensure that each package that requires it has the status applied.

No Connect and Update Component

When using **Update Component** to bring in changes made to a component, for example the No Connect status, none of the other switches for **Existing Component Values** or **Positions** affect the NC status.

No-Connect Pins in your Design

If you attempt to start or end a connection or track, or use the **Add To Net** command, on a pin marked as **No Connect**, the application will display a warning dialog asking you whether you really want to connect that pin.



This is not like a Spacing rule that is strictly enforced, it is there for your guidance, so you can still connect the pin if you really need to do so in a particular situation. Sometimes for example it could be preferable to tie NC pins to ground.

No Connect Pin Rules and Checking

Design Rule Checking in both Schematic and PCB editors have a new check for No Connect pins having nets assigned, to assist in applying this property retrospectively to existing designs by editing components and updating them in the design.



Translate to PCB and **Integrity Check** will also report warnings about **No Connect** pins in the Schematic that have nets assigned to them:

Transfer from Sche	matic to PCB.
Report Written:	Thursday, July 04, 2019
Design Path:	C:\Designs\Route66\
Design Title:	Route66_02
Created:	04/07/2019 04:03:53 PM
Last Saved:	

```
Editing Time: 10 min
Units: thou (precision 2)
Warning: connected 'No Connect' pin 2 on D1
End Of Report.
```

No Connect Pins and Properties

Once defined as NC in the Component, the **Properties** of a selected **Component Pad** will display a note on the dialog to show that the **Pad is marked as No Connect**:

Properties - Component Pad X							×
Pad	Compo	nent Va	alues	Nets	Associated Parts	Net	
Number: 2 Name: K							
<u>P</u> ositio	Position: 2875.0000 2730.0000 Rel						
<u>A</u> ngle:	Angle: 180.00 Pad marked as 'No Connect'						
Testlan <u>d</u>							
Plane	Plana Connection: Default Connection						

No Connect Pins and Display

The **Display** dialog has a new colour setting in **Settings and Highlights** that allows you to easily visualise the **No Connect Pins** in your Schematic or PCB designs:



No Connect Pins and Reports

The standard **Reports** option on the **Output** menu now has a No Connect report that shows No Connect pin connected to a net and ones that have this status but are not connected.



The report prints two separate blocks of data for NC connected and NC not connected:

🎫 Reports	
Report: No Connect Pins	(controller.sch) V
No Connect Pin	S
Report Written: Design Path: Design Title: Created:	Wednesday, July 04, 2019 C:\Users\Public\Documents\Examples\controller.sch
Last Saved: Editing Time: Units:	03/07/2019 02:00:03 PM 1338 min thou (precision 1)
No Connect Pins th	at are connected
<u>U5.3</u> <u>U3.7</u>	
Pins found: 3	
No Connect Pins th 	at are not connected
Pins found: 1	

New Warnings Page in Preferences

Within the Preferences dialog, there is now a Warning page.

Some messages currently being displayed by the application as normal yes/no (or OK/Cancel) message boxes have been changed to use the warning dialog which includes the option for "don't tell me again". These include deleting fixed items, deleting the copper belonging to a pour area being deleted, and creating a new named style. It will only be populated if they have been switched off and may contain nothing in the list on a new installation.

Preferen	ces									×
General	Display	Cross Probe	Dual Screen	Interaction	Schematics Interaction	PCB Interaction	PCB Tracks	Warnings		
Pro	mpt to sav	e Plot Job							Enable All	
									Disable All	

Select Mask

The new **Select Mask** capability provides you with a quick and easy method of filtering the selection for only certain types of items when working in **Select Mode**.

There are four new buttons on the **Edit** toolbar and corresponding entries on the **View** | **Select Mask** menu and on the shortcut menu in **Select Mode**. These provide a simple method of telling Select Mode whether to pick or ignore items based on four categories:



The default state is to have all four options enabled, you can then toggle them off and on from the tool bar buttons or menu commands when you need to.

Note: The **Select Mask** settings do not apply in modes other than **Select Mode**, as these modes already have a restricted set of selection settings appropriate to the particular mode or command.

Open Hyperlink

On the **Values** page of the **Component Editor**, a new button **Open Link** will open the selected value item as a hyperlink for any value that has text that looks like a hyperlink or a path to a file.

Value=1N5820G	<u>A</u> dd
MFR=ON Semi	
Supplier =RS	Delete
RS Stock No=774-3341	
Desc=Schottky Barrier Rectifier	Edit
HyperlinkDS=https://docs-emea.rs-online.com/webdocs/1573/0900766b8157	_
HypelinkWeb=https://www.onsemi.com/PowerSolutions/product.do?id=1N582	Up
Watt=3A	
Volt=20V	Down
Height=9.5mm	2000
Mouthing=PTH	All Packages
	Airrackages
	Open Link
	openeant

New Values are added to all other Packages

This option will recognise any value that starts with http, https, www., a drive name such as C: or a UNC path name such as \\server\path. If you select a value in the list whose text matches one of these patterns, then the **Open Link** button will become enabled. Clicking this button will pass the text string to the operating system to be opened in your web browser or relevant application directly from the dialog.

This **Open Link** button is also available on the **Values** tab of **Properties** for a **Component**, again allowing you quick access to reference material such as component datasheets directly from the application:

Properties - Component	×
Component Values Nets Associated Parts	
Value=1N5820G MFR=ON Semi Supplier=RS RS Stock. No=774-3341 Desc=Schottky Barier Rectifier Hyperlink DS=https://docs-emea_ts-online.d Hypelink Web=https://www.onsemi.com/Pr Watt=3A Volt=20V Heicht=9.5mm	<u>A</u> dd <u>D</u> elete <u>E</u> dit Open Link

Refresh Symbol in Component Editor

When you are editing a Component, you may find that you need to edit a Schematic or PCB symbol that is referenced by that Component. You can do this easily by right-clicking on the Symbol preview window and choosing **Edit Symbol in Library**.



When you have made the necessary changes to the symbol, saving it back to the library will now cause the previews in the Component to be refreshed by automatically reloading the newly saved symbol from the library. You no longer have to close and re-open the Component to see the changes.

Wizards for New Schematic and PCB Designs

New Wizards are now available to assist you in creating new **Schematic** and **PCB** designs. These are accessed from the **Wizards** tab of the **New** dialog on the **File** menu:

New	×
Design Wizard Technology PCB Design Schematic Design Schematic Symbol PCB Symbol Component Panel Design	OK Cancel

New Schematic Wizard

The **Schematic Wizard** helps you to produce consistent schematic drawings by providing you with access to a **Technology file** to used and your favourite **drawing outlines**:

Start	
Start Technology	New Schematic Wizard
Drawing Outline	This wizard will guide you through creating a new Schematic design

When you select **Finish**, you get the choice of writing the design to a given name and starting the design using that name (without saving it to file) or to write the design to file using a name that you specify and starting the new design.

New PCB Wizard

The **PCB Wizard** takes you through a series of steps that are intended to help you construct the underlying technology required for a particular PCB setup.

You can choose which Technology file to use, the Units, the Layers and the Board Outline.

Technology

New PCB Wizard - Technology	
Start Technology Layers Board Finish	Specify your required PCB technology Use Default Technology Choose Technology File:
	Specify your preferred design units Units: thou Vrecision: 0

The **Technology** page allows you to choose a technology file to use. You can either use the default technology set then add to it during the New PCB creation process in this wizard, or use your chosen Technology file. You can also your design **Units** and **Precision** to use.

New PCB Wizard - Layers		
Start Technology	Specify which layers you require	
Board	Define Layers:	
Finish	Electrical Layers Single Sided Board 2 Layer Board 4 Layer Board 6 Layer Board 8 Layer Board 10 Layer Board 12 Layer Board 14 Layer Board	Paste Mask for SMT
	Powerplane Layers	Auto-Route Bias
	Layer 2 Using Net:	First Routing Direction:
	Layer 3 Using Net:	Ų ÕY
	Layer 4 Using Net:	Allow Routes:
	Layer 5 Using Net:	On Inner Laye On Bottom Sid

The **Layers** page allows you to define the number of layers and associated layers for use in the design. If your chosen technology file on the previous page already has those defined, you can check the radio button to use the ones from the technology file. If you wish to craft them on this page, then make your selections.

Board Outline

Start Technology	Define your board outline
Eavers Board Finish	Define Board Size: Circle Width: 3000 thou Height: 2000 Use Board Outline From Chosen Technology File Copy Board Outline From Another File:
	Browse
	Board Preview:

The **Board** page enables you to define the board size or copy an existing board outline from another existing Easy-PC PCB design.

The Board Preview windows allows you to confirm the board outline chosen is the one required.

Finish

When you select **Finish**, you get the choice of writing the design to a given name and starting the design using that name (without saving it to file) or to write the design to file using a name that you specify and starting the new design.

Configuration Files

To help you manage the transfer of application settings between computers, and to assist with the backup of application settings in case of system failure, you can now save and load Configuration Files using the new tool that is accessed from the **Configuration Files** command on the **Help** | **Support** menu.

When you select this command, a separate application is launched to do the work. This application will save the existing settings from the 'current user' section of your system Registry to a file, or load a previously saved Configuration file into the Registry.

Management of Configuration files is done outside of the main application to ensure that the information in the Registry is fully up-to-date before a Configuration is saved, and that any information restored to the Registry is present for the Easy-PC application to load when it is next started up.

You should therefore close your Easy-PC application once the **Configuration Files** tool has been launched. You can also launch the tool from the shortcut on the **Start** menu that is placed there when the software is installed.



When run, you are presented with the **Configuration Files** dialog:

Configuration Files	×
Save/restore application configurations to/from backup correct operation, all copies of the Easy-PC application before continuing.	
Saving configuration will create a file containing all your current Easy-PC application settings from the system Registry.	Save
Loading a configuration will REPLACE all your current Easy-PC application settings in the system Registry with those contained in the chosen configuration file.	Load
Help	Close

Configuration files contain a simple textual representation of the application settings. These are saved with the file extension .acf. We do not recommend that you attempt to edit these files; the application does not have any 'special knowledge' of the meaning of the various settings stored in the file, so alteration of the contents could lead to faulty application settings in the Registry which in turn could cause the main application to perform incorrectly or even be unstable.

Save to Library Displays Information About Duplicates

There is a new check box on the **Save To Library** dialog within the **Library Manager** allowing you to check for duplicates. This operates on all library types; Components, SCM Symbols and PCB Footprints:

Save To Library	×
Library:	Discrete ~
Component Name:	D-SM
	Check for duplicates before save
	OK Cancel

This will tell you if the library item you are about to save exists in any other currently enabled library, to help you avoid accidentally creating unwanted duplicate library items. You may still want to save the library item with that name, for example to create a custom copy of a symbol that is provided by the standard libraries so that your custom symbol is the one that is used when adding components to a design.

If any duplicate items are found, the names of the libraries in which they are located are listed on a popup dialog. If any of the libraries are earlier in the search order than the library to which you are about to save your item then these are marked with an asterisk to highlight the fact that these would be used in preference to the one you are attempting to save.



The same check is also available in the **Save Items to Library** and **Import Items to Library** dialogs available on right-click from design and drag-and-drop (or **Add File**) in **Library Manager**. As these dialogs handle multiple library items, those items that have duplicates will be marked but there won't be a list of library file names as each component or symbol could be duplicated in different ways. However, this should still provide you with sufficient information to determine the possible effects of having those duplicate items present in your set of library files.

Preference							
General	Display	Cross Probe	Dual So	creen	Interaction	Schema	atics Interaction PC
Gener	ral						Reports
S	ecurity Co	pies After:	10	minute	es <u>L</u> ocati	on	Header
D	esign Bac	kups:	3	versio	ns L <u>o</u> catio	on	View Reports
Numł	er of Und	lo Levels:	20				All Reports U
T Carrie		IC LEVEIS.	20	~			Write Reports
Rece	ntly Used	Files:	10				
E	nable Sou	nds					
D	ocument l	Name First in V	Vindow C	aption			Save As
	pen From	Explorer Open	s New In	stance	of Applicati	on	Copy Associated
N	/orkbook	Tabs at Top					No
⊠c	heck For I	Duplicates on \$	Save to l	ibrary			🗸 Overwrite Exi
							BoardMaker Impo

You can also alter this setting with the check box on the **Preferences** | General dialog:

Add Component and Library Manager Dialogs Resizable

For more flexibility in displaying long component and path names, the dialogs for **Add Component** and **Libraries** can now be resized. To resize the dialog, grab the corner or bottom or right-hand edge of the dialog using the cursor to resize it.

Export Images as Bitmap and Metafile

This feature gives us two new commands on File menu Export > to output image to Bitmap and image to Metafile.

Add Text Choose Style and Alignment

When adding new text items to a design or symbol, controls are now available on the **Add Text** dialog to allow you to choose the **Text Style** from the currently defined list of Text Styles in **Design Technology**, and to adjust the text **Alignment**, all before placing the text. Previously you could only alter these by separate commands either during placement of the text or in **Properties** after the text has been placed. Properties can still be used to change the Style and Alignment of course.

I						
	Add Text					×
	Layer numb	er -				¥
	<u>S</u> tyle:	Normal Size:	25.00		~	
		Font:	<system stroke<="" td=""><td>Font></td><td></td><td></td></system>	Font>		
	Alignment:	 Left 	() Middle	O Right		
	<u>L</u> ayer:	Top Sil	k		\sim	
		0	Ж	Cancel		

Add Track or Shape Off-grid

When adding or editing a track or shape, holding the **Ctrl** key down will temporarily disable gridding, to allow you to place the next corner off the grid.

This could be a useful feature if, for example, you want to snap a track into a fine pitched SMD pad but want the routing to stay on a fairly coarse grid:



Note: We advise that you use the function sparingly to avoid shapes that are off-grid.

Highlight Net Interactive Mode

There is a new command on the **View** menu under **Highlight Net** named **Interactive**. This provides a special 'mode' of selection which highlights nets as items are selected.

Whilst in this mode, you can click on any item in the design and if that item belongs to a net then the whole net will be highlighted (drawn in **the Net Highlight** colour). Select a different item and the first net is redrawn without highlight and the newly selected net is then highlighted.



A special cursor confirms you are using this mode.

On the context menu in this mode you can toggle **Highlight without click** which flips between normal select mode (pick as you click) and an "auto select" mode where it will continuously attempt to pick items as you move the cursor, providing you with instant feedback on the connectivity in your design.

	Cancel	Esc				
	Highlight Without Clicking					
Remove Highlight						

From the context menu, you can also Cancel this mode and use the menu to Remove Highlight.

Make Cutouts from Shapes

The new command, **Make Cutouts**, appears on the shortcut menu in **Select Mode** when you have two or more **closed** shapes of the **same type** (and on the **same Layer** in a PCB or footprint) selected.



The **selected** shape with the largest area is used as the 'parent' shape, and all the other selected closed shapes that overlap with this parent shape are used to make cutouts of the outer shape. The original 'inner' shapes are then deleted.



Choosing **Make Cutouts** on the context menu, produces this below. The smaller shape has been 'cut' from the larger shape.



Another example of this would be to use the second shape to add cutout detail to the parent shape:



Selecting both shapes will cut the smaller shape from the larger one, evident once the shape is filled:



Confirmation that a shape is a cutout can be seen on the **Status bar** with the cutout shape selected:

Start	Page 🔡 Design1
	Shape Cutout Style: Normal Width: 5.00 Layer: Top Silk Size: 400.00 x 300.00
	Shape Cutour Style, Norman Whath, 5.00 Eager, 10p Silk Size, 400.00 x 500.00

This command can be useful for example if you have imported DXF data to create a company logo but it is only defined as a set of nested shapes without any information about cutouts or filling.

For example, you can take this set of five separate shapes (two nested inside larger shapes) as might be the case for text shapes:



Using this command, quickly turn it into these three filled shapes:



Group Name Shown On Status Bar

The Status bar will now show the name of the Group to which the selected item belongs:

∜Colour ers Colour True Width off	Pan Mouse Sensitivity:	Performance ✓ Redraw on Pan ✓ Ricker Free Redraw ✓ Fast Locate ✓ Fast Redraw
ide Pads Names Je Tracks	Sensitivity:	Default V Name
∺s Drilled-Out :h File in Previews	Centre After Zoom	Values Values
	Highlight	

There is also a setting on the **Preferences** | **Display** dialog to include the **Group** name on **Design Tooltips**:

When viewed in the design, with one or more items within the group selected, the tooltip will appear like this:



Display Grid in Previews

There is a new check box in Preferences | Display, called Screen Grid from Tech File in Previews.

With this selected it allows you to override the normal behaviour of suppressing any visible screen grid in symbol previews. If you check the box, any visible grid in the current technology file of the relevant type will be drawn in the preview.

In summary, checked will suppress the screen grids in symbol previews. not checked will draw the grids.



With the check box checked:

		\checkmark	Prev	iew																			
^	Add File																						
	New Item																						
- 6	Wizard																						
	<u>E</u> dit																						
	Find						/	1	i	1	i.	i	-	i	i	•	1	i					
	_ Delete					/	0	•	•	•	÷	ł	•	•	•	1	1	Ŀ	•				
	<u>C</u> opy To																						
	Move To						-												-				
	Rename												S										
	_						•						÷										
	Tech. Files																		÷				
	Styles Tool																		-				
	Report																			•			
~								•	ľ	ľ	Ċ	ľ	ľ	ľ	ľ	Ċ	ľ	ľ	Ì	-			
	Close on Edit					R																	
		•														-							

The grid dots are quite subtle, this is what a zoomed in view looks like:



With the check box unchecked grid dots are always forced off:



Cross Probe Single-shot Operation

A new check box on the **Preferences** dialog and **Cross Probe** page has been added. This new feature enables **Single-shot Operation**. This will tell the Cross Probe mode to probe once and then return to Select Mode. If this box is unchecked, then you will stay in Cross Probe until you cancel out or select some other mode.

Preference	25								
General	Display	Cross Probe	Dual Screen	Inter					
Bring Probed Design Windows to Front									
Which	h Designs	To Probe							
		esponding Desi ect or Same Na							
O Probe All Open Designs									
✓ Sing	le-shot Op	peration							

BOM Composer turn off Auto-generate Report

The normal operation of **BOM Composer** is to generate the report with every alteration you make to the report template or settings so that you can quickly adjust the operation.

题 BOM Composer					×
Bill of Materials Sections: Capacitors Diodes Connectors Resistors Transistors	Columns: Component Value Names Quantity Cost	Group By:	Sort By:	Generate from PCB Generate from SCM/PRJ Separate Top and Bottom Separate each Variant Include SCM/PCB-only	Collate by ref name Collate using name-range Sub-total sections Include standard header Extra header
⊘Others ⊘Associated Parts	×	~		Write CSV Filter: Comp Name: Pins: Single Variant:	Show Tooltips Auto Save BOM CB Symbol: Apply Clear t Variant>

With the BOM options unfolded, the new **Auto Save** check box allows you to override this behaviour, and only generate the report when you check the new **Save** button. The on-screen report will still be updated as you make changes to settings or the report template, but the files needed to update the on-screen display are generated in a temporary folder so that they do not affect your own project data.

Plotting Auto-load Job File

On the **Plotting and Printing** dialog and **Options**, there is a new check box **Auto load Job File**. With this checked, opening the Plotting dialog will automatically load a job file from the same location as the design. For a PCB design or a SCM that is not in a project, it will look for <designname>.EPJ, for a SCM in a project it will look for cprojectname>.EPJ.

Options	×
Device Setup Gerber Penplot NC Drill Windows	PDF Cancel
Job File Folder C:\Program Files (x86)\Number One Systems\Easy-PC Browse Where Plot Files Are Written Same folder as design file This folder below design file: Plots Always to this folder: Browse Pack output files into a Zip Remove individual files after Zipping	Options View report on completion Write report to same folder as plot files Close main plot dialog after producing plots Auto-generate plots when opening main dialog with no plots defined Warn if no plots include the board/panel outline Auto load Job File with same name as design Include Sign-off Checks Sign-off Checks
Pattern For File Names \$(DesignName) - \$(PlotName) (\$(Variant)) Compose	Drill Ident Drawing Setup Sizes and Symbols

Display Net Name on Component Select (SCM)

You can now select a whole **component** and show/hide net names for all connected pins/pads on that component in one go. Previously you could only do this for a single pad.

When you have multiple items selected and this includes one or more components, the **Display Net Name** command will show the net name for all connected pins on those components.



You can also switch off all net names associated with the component by selecting it and unchecking **Display Net Names** form the context menu.

Move Net Name Highlights Net (SCM)

In a Schematic design, when you **move a net name** you now have the option to automatically **highlight the entire net** to which that net name belongs.

This option is controlled by a new check box in the **Preferences dialog** under **Schematics Interaction** called **Highlight Net on Move Net Name**.

						×	
tion	Schematics Interaction	PCB Interaction	PCB Tracks	Warnings			
	~	Move Weld On I	· –	-	To Split Connections et on Move Net Name		
		Dynamic / Snap To	-).00 thou	1	- \	
		Align Wi	th: 🖂 Exter	nts Oric	inal Position		

Dangling Connections Report (SCM)

Within the **Schematic design editor**, the **Dangling Connections** report is available from the **Output** menu, **Reports**. This will show you any connection that doesn't end on either an electrical pin or doesn't connect to another point using an implied net name

Height Check Areas Renamed to Component Areas (PCB)

Height Check Areas have been renamed to **Component Areas** to reflect a wider range of their use, such as for use with Component Rules (see below) as well as their height checking capabilities.

Component Areas

When editing the **Properties** of a **Component Area**, you can assign it a name but with no height value. If you add a Height value, it can be used for multiple uses.

voperties - Co	mponent Area	×
Shape Area		
Name: Place	mentPSUGroup	
Component	Area	
<u>H</u> eight:	0.000	
-Routing Are	3	
Copper Pou	Area	
-copper Fou	Alea	

This can then be used within the Component Rules and Auto-Place feature.

Component Rules (PCB)

Component Rules allow you manage your component placement using simple keep in/out rules that use wildcard matching of **Component Properties** to areas. (Height Check areas have been renamed to Component Areas to reflect this additional use).

ad Styles	Text Styles	Line Styles	Hatch Styles	Track Styles	Layers	Layer Types	Layer Spans
Nets	Net Classes	Value Names	Spacings	Rules	Comp Rules	Variants	Wire Lengths
Enabled	Area	Туре	Value Name	Match			<u>A</u> dd
Yes	BGA	Keep In	[Group]	General*			Edit
Yes	PSUArea	Keep In	[Sheet]	PSU			Delete
Yes	PlacementAre	a Keep In	[Group]	General*			Delete
							<u>U</u> p
							Do <u>w</u> n

Component Rules are set up on the new Comp Rules page on the Design Technology dialog.

Each rule uses a wildcard string to match the desired components by value, reference name, component name, group or sheet name or within a named area.

Component Rule X						
Enabled						
Within Area:	PlacementArea ~					
Restriction:	Keep In 🗸					
Match Criteria						
Value Name:	[Group] ~					
Matches:	General*					
	OK Cancel					

When moving a single component, areas which are relevant to the rules for that component are drawn highlighted in two colours: in the **normal Highlight** colour for **Keep In areas**, and in the **Clearance Error** colour for **Keep Out** areas where that component should not be placed. This includes highlighting as 'keep out' any areas which specify a height restriction lower than the height of the component being placed. These visual cues provide you with instant feedback to assist with your component placement.

~				
	Key ☐ Not Visible ☑ Visible ■ Not Selectable	Merge Colours Shapes Tracks	Show Clearances:	✓ Finish Markers: Direct Hit: Near It:

With the **Online DRC** option enabled, you also get an instant warning



Overriding this DRC violation will write a **DRC Error Marker**, **Properties** of this marker will show you the error:

roperties -	Error	>
Error		
Componen	t Area	
	t U14 inside area "PlacementPSUGroup" component rules as Keep Out	
Item1 : Position:	2604.0000 6500.0000	
Item2 :		
Position:	2604.0000 6500.0000	
Layer:	Top Electrical	
Accept	ed (signed-off) Error	

Auto-place Using Rules (PCB)

As well as the **Component Rules** assisting with manual placement, the **Auto-place** dialog has a new option to make use of these rules when placing components.

Autoplace	×
Components To Place All Dutside Board From Bin Inside Board Selected Sheet	O C

Add Track Action on Cancel (PCB)

There is a new check box in **Preferences**, **PCB Tracks**, for **Cancel in Add Track returns to Select Mode**. The default setting is True (to follow existing behaviour).

	Adding or Editing Tracks		Use Grid
	✓ Use Selected Track Style		
	Allow Duplicate Tracks	Double Click To End Track	Adjust Track
	Allow Pick Connections	O Complete Track	Mitre Re:
<u> </u>	Edit Connection As Track	Finish Here	Track there
	Cancel in Add Track returns to Select Mode		Track Hugg
V I	Show Nearest Node On Net		• /ways c

If this box is checked, then pressing Escape or cancelling while adding a track will cancel the mode and return to **Select** Mode. If instead this box is not checked, cancelling the current track will stay in **Add Track** mode waiting for you to start the next track.

Edit Package in Library (PCB)

If you right-click on a component, you can now select a new command **Edit Package In Library**. This will open the **3D package edit** dialog showing the 3D package that corresponds to the component's footprint.



Enhanced Functionality for Create Fanout Pattern (PCB)

The **Create Fanout Pattern** dialog on the **Tools** menu, **Auto Fanout** > dialog has been enhanced. It now has controls to define how to automatically calculate the offsets so that vias are placed midway between rows/columns of pads (previously the values were calculated based on the extents of pad and via).

You can also choose the **Via Layer Span** from the drop-down list of spans to be used for the vias (previously always inserted them using Through-Hole span).

\Rightarrow	Create Fanout Pattern Offset Midway Between Pads Custom Offset: X 19.69 Y 19.69 Y	X Direction Apply To Apply To Selected Pads Only Use Pad Extents Via Layer Span [Through Hole] Via Layer Apply To
	Track Style <u>N</u> ame: Signal Min	Via Style: <u>Name:</u> Small Via

Online Design Rule Check for Components (PCB)

When using the **Online DRC**, the functionality has been enhanced to include **Component Area** and **Component Height** checks when placing a component. This ensures any rules set up through the Component Rules dialog or Component Height Properties will be checked dynamically.

Delete Unused Net Match (PCB)

To assist in 'trimming down' a set of **Net Match** rules defined in a technology file to retain only those that apply in the current design, a new button, **Delete Unused**, is now available on the **Spacings** page of the **Design Technology** dialog.

When you click this button, all the currently defined Net Match rules will be checked against the nets and net classes defined in the design, and any rules that do not match with anything will be deleted.

*	Yes
*	103
	Yes
	165

Add to Net on Pour Area (PCB)

When you right-click on a **Copper Pour Area** that is not yet assigned to a net, choosing the **Add To Net** command will take you to a new dialog where you can use 'filter' options to help you quickly find the correct net for your Area.

Add Area to Net	×
GND N0655 N0656 N0657 N0658 N0659 N0669 VCC	
Filter:	
Nets within Area	
Nets using Net Class:	~
OK Canc	el

The list will contain net names inherited from the design where the area overlaps items on those nets. If the area does not cross anything, it will have no net names. In this instance you can type the net name required to add it to that net, or type a new net name to create a new net for this area.

Pour Copper adds DRC Error Markers (PCB)

When using the **Pour** option, if it finds any issues it needs to tell you about (e.g. insufficient thermal spokes, copper area too small or unconnected) these are already listed in the report, but it will now also add **DRC error markers** (code "Cu") to the design so that you can find them using the **Goto** bar.



When you re-pour or clear any copper area, any copper DRC markers within that area and on the same layer as the area are removed.

Rename Component "immediate" mode (PCB)

The existing point and click interactive **Rename Components** mode on the **Tools** menu has been extended to allow a simple "immediate" rename of all components matching the supplied name stem.

Rename Component	×
Match Name Stem: R ✓ Apply Name Stem: U ✓	OK Cancel
Apply Name Stem: U V	
Start Numbering From: 1	

On use, the option returns to the **Rename Components** dialog ready for the next action.

Also, there are additional radio buttons on the dialog.

Apply Name Stem To All

When using this mode (which is only available if the two component name stems are different) then the rename action will take place as soon as you click the **OK** button.

A message will be displayed showing how many components were renamed, and you will be able to choose whether to return to the dialog to rename some more components, or exit from the rename operation.

Interactive Rename

When using the Interactive Rename you need to enter the start number from which the 'new' component names should begin.

When you click **OK**, the dialog closes and the 'point and click' renaming can begin. All the components matching the chosen stem will be highlighted to help you see them easily on your design.

Each time you select a component, the current name in the sequence is assigned to that component, and the sequence number is incremented. The next name to be applied is always displayed on the Status Bar.

If the next name to be applied is already in use elsewhere in the design, the application will ensure that the names are swapped over so that no duplicate names exist.

Swap Components (PCB)

The ability to swap two components to exchange their positions has been added.

Select the option from the **Edit** menu and **Swap Component Positions**, select the first component and then the component to swap with.

You can also select the two components first, then choose the option from the Edit menu.

This option will swap similar components and components that are unlike, provided they can be swapped, for example if it creates a DRC error because of a Component Rules area violation.

Intelligent Gerber Import Improvements (PCB)

Drag and Drop

You can now take Gerber or Excellon or BOM files and drag them from your desktop or Windows Explorer window and drop them onto the Intelligent Gerber Import dialog. This will operate the same as if you had used the Add button on the dialog but is obviously much quicker.

New Dialog Navigation

Technology	File					
4sig2pwr				~	<u>O</u> pen	<u>F</u> olders
nput Files						
Gerber	controller - Top Silk Screen.gbr	Top Silk	mm	3.5		
Gerber Drill	controller - Bottom Electrical.gbr controller - Drill Data - [Through Hole].drl	Bottom Copper [Through Hole]	mm thou	3.5 2.3		
Du						

There is a new **Clear** button to empty the list of input files.

There are new **Load** and **Save** buttons to load and save settings files that define a set of files to import.

There is a new check box option to **Auto Save** (and auto load) the dialog settings so that the next time the dialog is opened, it returns with same files as before.

More File Information

There is more information about file contents displayed on the dialog. For example, the file Units and Gerber format.

Gerber	controller - Top Silk Screen.gbr	Top Silk	mm	3.5
Gerber	controller - Bottom Electrical.gbr	Bottom Copper	mm	3.5
Drill	controller - Drill Data - [Through Hole].drl	[Through Hole]	thou	2.3

Better Layer Name Matching

The Intelligent Gerber Import dialog now does a much better attempt at name matching of Gerber files when matching the filename to Layers in the design, such as Silkscreen, Solder Resist, etc.